CHM2046L GEN CHEM II LAB, FALL 2024

CLASS #: 10847, 10873, 10846, 10878, 10877, 10880, 10875, 10876, 10848, 10874, 10879

INSTRUCTOR INFORMATION

COURSE COORDINATOR

Instructor	Email	Phone	Office Hours
Dr. Korolev Instructional Professor	Email via Canvas preferred korolev@ufl.edu	352-392-1087 (email preferred)	MWF 9:30am-10:30am in LEI 308 and by appt

LAB MANAGERS

The lab managers are Candace Biggerstaff and Autumn Chiotti. They can be contacted via Canvas email.

TEACHING ASSISTANTS

Your teaching assistant will be assigned during the first week of the semester. You will meet your teaching assistant during the first lab meeting and they will provide you with their contact information.

GENERAL INFORMATION

COURSE DELIVERY

This course will be delivered 100% face-to-face. All lab meetings will occur during your scheduled lab time. The schedule is subject to change and changes will be communicated via Canvas announcements.

MEETING TIME/LOCATION

CHM2046L meets once per week in SFH 110 during your scheduled lab period. The meeting time can be found on your schedule on ONE.UF. You will enter the lab from the atrium in SFH once the lab managers let you in.

DESCRIPTION/GOALS

As both a general education requirement and major's course, CHM2046L is designed to introduce you to common laboratory techniques and equipment used in the general chemistry laboratory, to help you gain understanding and proficiency in their use, and help you explore the process of doing experimental chemistry, and to illustrate representative examples of the useful and important concepts you are learning in the CHM2046 lecture. The course serves to teach the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world.

Specifically, students will be able to:

1. Safely handle, use and dispose of chemicals, identify chemical hazards and risks, and use databases to locate chemical safety information.

2. Apply the scientific method and demonstrate proper and safe use of lab equipment and proficiency in relevant techniques to conduct experiments, and to work effectively in small groups and teams.

3. Describe the importance of ethical and responsible conduct in a laboratory setting.

4. Design, construct, and interpret data tables and graphs accurately to communicate experimental findings.

5. Perform accurate and precise quantitative measurements, analyze data statistically and assess reliability of results.

6. Communicate scientific findings and demonstrate scientific reasoning effectively in written form.

GENERAL EDUCATION OBJECTIVES & OUTCOMES

Primary General Education Designation: Physical Sciences (P) (area objectives available here)

A minimum grade of C is required for general education credit. Courses intended to satisfy the general education requirement cannot be taken S/U.

Physical science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems. Students will formulate empirically-testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

The course objectives align with the UF General Education student learning outcomes and physical science area learning outcomes:

General Education SLO	Physical Science SLO	Course Objective Alignment	Assessment
Content	Identify, describe, and explain the basic concepts, theories and terminology of natural science and the scientific method; the major scientific discoveries and the impacts on society and the environment; and the relevant processes that govern biological and physical systems.	Objectives 1-6	All assessments offer opportunities for students to demonstrate content knowledge.
Critical Thinking	Formulate empirically-testable hypotheses derived from the study of physical processes or living things; apply logical reasoning skills effectively through scientific criticism and argument; and apply techniques of discovery and critical thinking effectively to solve scientific problems and to evaluate outcomes.	Objectives 1-6	All assessments offer opportunities for students to demonstrate critical thinking skills.
Communication	Communicate scientific knowledge, thoughts, and reasoning clearly and effectively.	Objective 3-6	Post-lab notebooks, during-lab assignments, post-lab assignments.

LEARNING OUTCOMES

A complete list of student learning outcomes and technical skills is posted in Canvas, organized by laboratory experiment.

COURSE REQUIREMENTS

REQUISITES

Requisite information and credit suitability can be found in the Undergraduate Catalog.

REQUIRED MATERIALS & FEES

You will require: a computer with an internet connection and Excel, a suitable laboratory notebook such as a standard composition notebook, and department approved safety glasses or goggles. See the safety glasses suggestions at https://otl.chem.ufl.edu/safety-glasses/. Additional Course Fee: $35.00

GOGGLES AND ATTIRE

You must be wearing department approved safety glasses or goggles, and be properly attired to be admitted to the laboratory at all times, including on the first day of lab. Anyone without safety glasses, or who is inappropriately attired, will not be allowed into the lab. Additionally, no gum chewing or headphones will be allowed. If you are asked to leave the lab due to improper attire, you will not be permitted a makeup. You can leave to change attire and return as long as it is within 15 minutes of the start of the period.

LAB SAFETY

You are responsible for reviewing the safety information provided in Canvas. All of the activities worth credit for the course will be locked in Canvas until you satisfactorily complete the Safety Contract.

LAB SCHEDULE (SUBJECT TO CHANGE)

This lab schedule is subject to change - students should keep their schedule free so that they are available during their scheduled lab meeting time every week. Flex days may be used if regularly scheduled lab days need to be rescheduled due to inclement weather, lab closure, etc. Schedule changes will be clearly communicated via Canvas announcements; it is students' responsibility to read the Canvas announcements.

DATES	Monday	Tuesday	Wednesday	Thursday
Aug 19 – Aug 23	No Labs			
Aug 26 – Aug 30	No Labs – First Online Assignments due Aug 30th at 11:59pm			
Sep 2 – Sep 6	Holiday – No Labs	Radioactivity & Kinetics Lab		
Sep 9 – Sep 13	Beer's Law Lab			
Sep 16 – Sep 20	Equilibrium Constant Lab			
Sep 23 – Sep 27	Le Chatelier Lab			
Sep 30 – Oct 4	Acids, Bases, & Titrations Lab			
Oct 7 – Oct 11	Gel Electrophoresis Lab			
Oct 14 – Oct 18	Thermodynamics Lab			
Oct 21 – Oct 25	Radioactivity Lab	Flex Days		
Oct 28 – Nov 1	Galvanic & Electrolytic Cells Lab			
Nov 4 – Nov 8	Lab Practical			
Nov 11 – Nov 15	Holiday – No Labs	Transition Metals Lab		
Nov 18 – Nov 22	Transition Metals	Flex Days		
Nov 25 – Nov 29	No Labs			
Dec 2 – Dec 6	Flex Day	No Labs		
Dec 9 – Dec 13	Final Lab Exam on Wednesday, December 13th from 12:30pm-2:30pm			

ATTENDANCE INFORMATION

FIRST DAY OF LAB

Your first in-person lab meeting will be the week of September 2nd (Monday students will begin September 9th) but you have assignments due the week prior. The first deadline for online assignments is August 30th at 11:59pm - check Canvas for details. During your first lab meeting, you will meet your TA and fellow classmates, and complete the first lab activity. You will not be allowed to enter lab without proper safety attire, including approved eye protection. Prior to attending each lab period, you must familiarize yourself with the lab background and procedure, and complete the pre-lab assignments. Pre-lab assignments will be due at 8:00am on your scheduled lab day. During the lab meeting, you will work on performing the lab and completing all lab assignments. Your lab workstation is equipped with a computer on which you can access all of the lab materials including the procedure. If you are marked absent by your TA or fail to complete the attendance quiz during the allotted time at the start of lab you are not permitted to turn in the post lab assignments and forfeit the grades. During-lab assignments (any graphs or pictures assigned) must be submitted before the end of the lab period. Post-lab notebooks are due online at 11:59pm the day of your scheduled lab.

LAB PERIOD

You are required to attend lab in-person during your scheduled lab period. If you are well-prepared, you should not experience difficulties completing the experiments within the allotted timeframe and submitting post-lab assignments that day. If you are marked absent by your TA or fail to complete the attendance quiz during the allotted time at the start of lab you are not permitted to turn in the post lab assignments and forfeit the grades. If you are more than 15 minutes late, you will not be allowed to enter lab and you will be considered absent. Any student who has an unexcused absence will not be allowed to submit any during- or post-lab assignments.

ABSENCES

Excused absences are for extenuating circumstances only: documented illness, family emergencies, or university approved absences. Travel, non-emergency doctor or dentist appointments, or extracurricular activities do not justify an excused absence. Missing lab due to improper lab attire does not qualify for an excused absence. Emailed requests to "preview" excused absences will be ignored; it should be clear what constitutes an excused absence. Absences due to makeup exams for other courses will not be considered excused.

Students who miss lab due to extreme circumstances beyond their control may submit a request for a makeup lab within 7 days of the missed deadline. To have a request considered for approval, you must (1) complete the Absence Request Form on Canvas; and (2) provide documentation by either attaching a doctor's note to the form (if due to illness) or request an excuse note from the Dean of Students Office (if due to a family emergency). Requirements for class attendance and make-ups in this course are consistent with university policies that can be found in the Undergraduate Catalog.

Students who miss lab (excused or not) are responsible for the material which may appear on the lab exam.

Any student who misses more than 2 lab sessions (excluding religious observances, disability related absences, or military leave), whether excused or unexcused, will receive a grade of E in the course.

For pre-lab extensions due to illness/emergency, a Dean of Students note must be provided for at least the 2 days prior to the assignment's deadline for accommodations to be considered. Extensions will not be given because of technical or personal issues that occur within 24 hours of the assignment deadline.

GRADING

DEADLINES AND LATE POLICY

The first assignments for the course are due online on August 30th at 11:59pm. The remaining lab activities will be locked on Canvas until the safety contract is completed. If you miss any assignments due to not completing the contract, you will forfeit the grades.

Each week you will have pre-lab assignments and post-lab assignments. The pre-lab assignments will be due at 8:00am the day of your scheduled lab period. During lab assignments (pictures or graphs assigned) are due by the end of your lab period and must be submitted from your lab workstation. Note that if your lab group finishes the lab activity and departs lab, you will not be permitted reentry into the lab. Post-lab assignments are due by 11:59 pm the day of your scheduled lab period. All deadlines are in EST.

Pre-lab and During-lab assignments cannot be completed late for any credit. For best performance, use only Firefox or Chrome for quizzes. Make sure you start well in advance of the deadline in case your computer's clock differs from official Canvas time. Post-lab assignments that are submitted late will be deducted 25% credit per day that they are late. The penalty is applied even if the submission is received one second past the 11:59pm deadline, so be mindful of time. Emailed assignments are not considered for grading.

We highly recommend you submit assignments early and verify they've been submitted through Canvas. We advise against using the Canvas App to submit assignments - use a web browser to avoid issues. If you encounter technical issues, you can contact the Help Desk at 352-392-4357.

GRADE BREAKDOWN

Each laboratory is comprised of a Pre-Lab quiz, a Pre-Lab Notebook grade, a During/Post-Lab Notebook grade, and various other assignments specific to that lab. Each lab as a whole is weighted equally toward your final grade. Within each lab exercise, assignments are weighted according to the published point values in Canvas. If there is any confusion about this, please contact the course coordinator. Detailed information regarding each of these grading items is provided in Canvas. Assignment weights are as follows:

Assignment Group	Weight %
Safety/Syllabus/Surveys	5%
Pre-Lab Assignments	25%
During-Lab Assignments	15%
Post-Lab Assignments	25%
Lab Practical	15%
Final Lab Exam	15%

Grade scale (note: there is no rounding to your score in Canvas):

Letter	A	A–	B+	B	B–	C+	C	D+	D	D–	E
Cutoff	≥93.0	≥90.0	≥86.0	≥83.0	≥80.0	≥76.0	≥70.0	≥66.0	≥63.0	≥60.0	<60.0

ASSIGNMENT DESCRIPTIONS/TIME COMMITMENT

Syllabus Quizzes are designed to assess your knowledge of the content of the course syllabus. The syllabus does contain a lot of information, and you can refer to the syllabus when needed.

Pre-Lab Quizzes are designed to assess your knowledge of the background information for each lab activity. Questions include content and calculations similar to those you will perform during or after the lab.

The **Pre-Lab Notebook** is designed to assess your preparedness for each lab activity and familiarity with the safety of chemicals used, knowledge of procedural steps, or readiness otherwise (calculations performed, data looked up in a reference, etc.).

Pre-lab quizzes and notebook typically involve <30 min of video instruction and 2-5 p reading, and can all be completed <90 min for students who have completed or are enrolled in the corequisite course (CHM2046).

During-Lab Assignments are generally of two types: a picture/photo of an experimental set-up or artifact from the lab, or a graph prepared while in lab. They are designed to ensure you complete tasks when instructed to do so, and while your TA is present to assist if needed (with a graph, for example). Each has a detailed grading rubric to guide preparation of your submission.

The **During-Lab Attendance Quiz** is due within the first 20 min of the scheduled lab period and must be completed in the lab from a lab workstation. The attendance quiz counts as part of the during-lab assignment grade category. If you fail to complete the quiz within the first 20 min you can complete it later during your lab period only, but will incur a late penalty of 25%.

Post-Lab Assignments are .pdf scans of your laboratory notebook. You can write more than is required in the grading rubric for each but each lab has specific requirements, so refer to the grading rubrics each week. You will record observations, make calculations, you may write abbreviated procedural steps, discuss sources of error, and make tables of data and sketch experimental set-ups in your lab notebook.

Surveys may be part of educational studies or may ask you about specific aspects of the course or for an evaluation of your TA near the end of the semester.

Safety Quizzes are designed to assess knowledge of safety terms, pictograms, and other safety information we cover each week. Also included in the 'Safety' category is the Safety Contract, which is an acknowledgement of general safety considerations for the lab, specific safety information related to our general chemistry lab, and familiarity with portions of the American Chemical Society's Guidelines for Chemical Laboratory Safety (a document is provided for you to review throughout the semester).

Other post-lab assignments may include Discussions or Assignments in Canvas. Each is associated with a specific lab activity and with specific lab-level student learning outcomes specified in Canvas.

During- and post-lab assignments are designed to be completed during the allotted lab period.

The **Lab Practical** is a timed, individual assessment of your ability to follow a written lab procedure, perform quantitative tasks accurately and precisely, perform calculations and generate a graph using Excel. The practical exam is subject to the same attendance requirements as the final exam (below).

FINAL LAB EXAM

A multiple-choice lab exam will be administered during our assigned final exam time on Wednesday, December 11th from 12:30pm-2:30pm, in rooms TBA. The exam is a cumulative final exam that covers everything in the lab manual (the modules in Canvas).

Bubbling errors will not be negotiated. A 5 point penalty will be applied for failure to bubble in a UFID correctly or not taking the exam in the assigned room. A 30 point penalty will be applied for failure to bubble in a form code or the wrong form code or for using a writing implement that cannot be scanned (e.g. a pen).

Exam absences will be handled in accordance with official UF academic regulations. For more information, see https://catalog.ufl.edu/UGRD/academic-regulations/ . See below for further clarification for two different types of situations.

(1) Conflicts with other events: Such reasons may include religious holidays, military obligations, special curricular requirements (e.g., attending professional conferences), or participation in official UF-sanctioned activities such as athletic competitions, etc. For more information on such absences see the official UF Policy at https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#absencestext). If you must be absent for an exam due to a documented and approved conflict known in advance, you must e-mail your instructor (within Canvas) the documentation at least one week prior to the scheduled exam and an early conflict exam will be scheduled for you (***before*** the regularly scheduled exam date/time).

(2) Missing an exam due to an emergency or sudden illness: If you are absent for an exam due to an unpredicted documented medical reason or family emergency, you must contact the instructor as soon as possible, and you may be asked to have your excuse verified by the Dean of Students Office (DSO). Your instructor will follow UF academic regulations in evaluating the notification and/or documentation received from you or from the DSO on your behalf. Once your instructor is satisfied with the validity of your exam absence a make-up exam will be scheduled after a reasonable amount of time, i.e., before the end of the semester. If your documentation is deemed insufficient to excuse your absence you will receive a zero on the missed exam.

Exams taken at any other time than the regularly scheduled exam time have different questions that assess the same material at a comparable level of difficulty. Students are not able to review these exams until after the semester has concluded.

RE-GRADES

All lab assignment grades are graded by your TA so you should communicate any lab notebook grade disputes to your TA. Your TA will address your concerns at that time and make any necessary corrections. If your TA finds it necessary to re-grade your lab notebook, he/she will correct the grade on your notebook and on his/her grade sheet immediately. The notebook must be scanned and submitted to Canvas to the relevant assignment in order for points to be considered toward your course grade.

Regrades of assignments submitted through Canvas, typically via file upload, must be requested within 7 days of a grade being assigned, and should be directed to your TA. If there was a technical issue with the file that was submitted on Canvas, the file can be resubmitted via the comments section to be regraded, but the assignment will suffer a 50% penalty. Technical issues are the student's responsibility so it is recommended that you check your submission when you upload it on Canvas.

EDUCATIONAL RESEARCH STUDY

This semester, CHM2046L is part of a chemical education research study within the Department of Chemistry and the College of Education at UF, investigating persistence in STEM fields among students enrolled in our undergraduate lab courses. The study includes three surveys, the first of which includes an Informed Consent question.

To participate in the study, students will agree to the Informed Consent Form as part of the first research survey by the survey due date. If you do not wish to participate in the study and have your survey data removed from the collected data, you still must complete the three surveys. We do ask you to participate in the study since the data collected may prove valuable. Please note that you will have to complete all three surveys prior to their due dates to earn a portion of your course grade; these surveys are included in the Survey category in your gradebook. Participation does not influence your course grade in any way.

COURSE COMMUNICATIONS

NETIQUETTE

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. Please be mindful of your comments and responses, and make sure that they are respectful and inclusive to all participants.

CONFLICTS

If you experience issues with CHM2046L that you cannot resolve with your TA, please contact Dr. Korolev via Canvas email or in-person. Don't wait until the end of term to resolve an ongoing issue.

UNIVERSITY POLICIES

ACCOMMODATING STUDENTS WITH DISABILITIES

Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

INCLUSIVE LEARNING ENVIRONMENT

We embrace the University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinion or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." We are committed to fostering an open and inclusive classroom and laboratory environment in our College, where every student, guest instructor and contributor feels valued. If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office on Multicultural & Diversity Affairs Website: http://www.multicultural.ufl.edu/

ACADEMIC MISCONDUCT

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida. The following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php."

CAMPUS RESOURCES

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

ACADEMIC RESOURCES

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint Process.

EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/ . Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

DISCLAIMER

This syllabus represents my current plans and objectives. If those need to change as the semester progresses, which is not unlikely, then the changes will be communicated to the class clearly.

SAMPLE GRADING RUBRICS

Safety Assignment

Safety Assignment

You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings			Pts
A notebook page with hand-drawn pictograms is uploaded (2.5 points) and it contains the description of each pictogram (2.5 points). All information is written in pen, not pencil.	5 pts Full Marks	2.5 pts Missing required information	0 pts No Marks	5 pts
				Total Points: 5

Pre-Lab Notebook Assignment (sample, Acids & Bases)

Acids/Bases Pre-Lab Notebook

Criteria	Ratings		Pts
Materials List	2 pts Student writes down the full list of materials	0 pts No Marks	2 pts
Theoretical pH	3 pts Student determines the theoretical pH for each of the solutions in Part 1	0 pts No Marks	3 pts
			Total Points: 5

Calibration Curve (During-Lab Assignment)

Calibration Curve (1) (1)

You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings		Pts
Contents, Labels	3 pts Graph includes all standard solutions (1 point), contains descriptive axis titles (1 point), and contains the dependent variable on the correct axis (1 point).	0 pts No Marks	3 pts
Trend Line	2 pts Graph includes a trend line that crosses through all of the data points (1 point). The equation of the line is displayed as well as the R2 value (1 point).	0 pts No Marks	2 pts
			Total Points: 5

Post-Lab Notebook Assignment

Beer Notebook

You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings		Pts
Data	1 pts Student records all data in organized tables	0 pts No Marks	1 pts
Questions	2 pts Student appropriately answers the questions in the procedure	0 pts No Marks	2 pts
Calculations	2 pts Student shows calculations for determining the concentrations	0 pts No Marks	2 pts
			Total Points: 5

TA Recorded Attendance

Attendance/Participation

Criteria	Ratings		Pts
Attendance	1 pts Full Marks	0 pts No Marks	1 pts
			Total Points: 1

During-Lab Assignment (photo, Le Chatelier Lab)

Le Chatelier Image

You've already rated students with this rubric. Any major changes could affect their assessment results.

Criteria	Ratings		Pts
Contents	3 pts Image of 24-well plate contains all required wells	0 pts No Marks	3 pts
Labels	2 pts All the filled wells are labeled	0 pts No Marks	2 pts
			Total Points: 5